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ABSTRACT

A review of the literature concerning the relationship between sex role and self measure identity includes a discussion of issues confronted in measurement. The methodology and analyses of data for the study are explained. The research was designed to determine which self referent measure most effectively discriminates among sex role identities. Another objective was determination of self classification on a sex role identity measure. The Bem Sex Role Inventory (BSRI), the Personal Orientation Inventory subscales of self acceptance and self regard, the Self Esteem Questionnaire, and the Wallace Self Concept Scale were administered to a sample group of college juniors. Results indicated high scores on self measures for androgynous individuals are an integration of masculinity and femininity. The self concept measure was the most effective discriminator among sex role identities. The BSRI placed subjects in approximately equal numbers in categories of androgyny, masculinity, femininity, and undifferentiated. The integration of masculinity and femininity is associated with high ratings on self measures. BSRI requires a classification procedure, therefore discriminant analysis was used. The limitations on the generalizability of the study included the ex post facto design, disproportionate classifications in the sample, and data contradictory to several other studies. (DWH)

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Discriminant Analysis Between Four Different Self Measures And Sex-Role Identity With Junior Year College Students

Gaylen R. Wallace and Sharon Goodwin-Adam

The literature on the relationship of self-referent measures and sex-role identity support the conclusion that a moderate and positive association exists between these two classes of variables. Among the many problems faced in drawing conclusions from the reported research is the lack of consistency in measures used across the various studies, especially self-measures. Due to this problem a research study was designed to determine which type of self measures most effectively discriminates among sex-role identities. The statistical procedure chosen to analyze the data was a multiple stepwise discriminate analysis. The dependent or group classification variable was sex-role identity and the discriminate variables were four different self measures.

The sex-role identity measure used was the Bem Sex-Role Inventory with the recommended four way classification of androgyny, masculinity, femininity, and undifferentiated. The BSRI was chosen because it was the scale most often used to measure sex-role identity. On the other hand there was no one self measure which was consistently used across studies. In view of this the self measures chosen to be used in a discriminate analysis model were the Personal Orientation Inventory sub-scales of self acceptance and self regard, the Self Esteem Questionnaire, and the Wallace Self-Concept Scale.

We will first present a review of the literature between self measure and sex-role identity, followed by a discussion of the issues confronted in

measuring these two classes of variables. Presented next are sections on methodology, the analyses of data, and finally the discussion and summary.

SELF-REFERENT MEASURES AND SEX-ROLE IDENTITY

The self-referent variable most commonly used in sex-role research literature is self-esteem. The other variables of self-regard, self-concept and self-acceptance appear less often.

Beginning with the early studies reported in the literature there was an indication that an important relationship existed between self-referent measures and sex-role identity. Rosenkrantz, et al (1968), found that masculine typed persons scored significantly higher than did feminine typed persons on individual self-concept items. Spence, et al (1975), found that persons who had high scores on both the masculine and feminine scales (androgynous classification) and those who scored high on the masculine scale, also scored high on self-esteem. On the other hand, feminine and undifferentiated (persons scoring low on both the masculine and feminine scales) subjects were low in self-esteem. Wetter (1975), also reported high levels of self-esteem to be associated with both the masculine and androgynous orientation. Bem (1977), reported results very similar to Spence, et al (1975), where masculine and androgynous subjects scored high in self-esteem and feminine and undifferentiated subjects scored low in self-esteem.

In later studies similar results have been reported. Hones, et al (1978), in a study of undergraduates, reported that masculine typing for both males and females was associated with the highest levels of self-esteem. High femininity scores for both sexes were associated with the low levels of self-esteem. Schiff & Koopman (1978) found that androgynous typed females possess a high degree of self-esteem, but did not report significant differences

between androgynous and masculine typed females. O'Connor, Mann & Bardwick (1978), studying upper middle-class adults, also found high self-esteem scores to be associated with masculine typing for both men and women. Interestingly high self-esteem scores were associated with feminine typing for females, but not for males. Hulfish (1978), however, found that for undergraduates, self-esteem was unrelated to femininity scores. Orlofsky (1977), in a study of college students, reports that androgyny is associated with high levels of self-esteem. Stericker & Johnson (1977), found a relationship between masculinity and high self-esteem for both men and women. The combination of high achievement motivation and high masculinity for women was associated with high self-esteem levels. For men, low achievement motivation combined with high femininity was associated with the low self-esteem scores.

Hoffman & Fidel (1979), in a study of middle-class men and women, found that androgynous and masculine typed individuals reported significantly higher levels of self-esteem than other groups. Bedeian & Zarra (1977) found no difference in self-esteem scores of "traditional" and "non-traditional" females. They point out that no analogy should be drawn between "traditional" and femininity versus "non-traditional" and masculinity.

Paul & Fischer (1980), in a study of Black adolescents, found that the high self-concept group had a significantly greater proportion of adolescents with androgynous or masculine sex roles than the low self-concept group. When classified by sex, the female high self-concept group had a greater number of androgynous sex-roles than the low self-concept group. For males, there was no signigicant difference between high and low self-concept groups on the masculine scale. Doherty & Schmidt (1978), in a study of undergraduate females also found the androgynous typed group scored higher on self-concept measures than other groups. Surprisingly, the feminine typed group scored higher on the self-concept measure than did the masculine and undifferentiated groups.

Small, Teagno, & Selz (1980), in a study concerning the relationship of sex-role to psychiatric symptomology and personality functioning in adolescents, found that sex-role typology yielded no significant differences on the medical and psychiatric scales. However, the androgynous teenagers showed more favorable adjustment including a well-defined self-concept. In another study Deutsch & Gilbert (1976), found that for females sex-typing was associated with poor adjustment with masculine typed males scoring higher than androgynous typed males on the adjustment scale. Anderson (1978) found in a study using college students, that androgynous typed individuals were more self-accepting.

Only two studies were located which attempted to look at more than one self measure with sex-role identity. Zuckerman (1980), conducted a study which looked at self-esteem and self-concept as separate variables and found that for white women age 18 to 25 the in[illegible]tion between self-esteem and socioeconomic status influences sex-role attitudes. She also reported that intelligent, unconventional and/or non-religious self-concept is predictive of femininist attitudes. For males, less physical strength, religousness, and intelligence were self-concept predictors of femininist attitudes.

Flaherty & Dusek (1980), conducted a study showing that the relation of sex-role to self-concept depends on what aspect of the self is being measured. They found masculine and feminine typed groups scored at expected ends of the self-concept dimension, with androgynous and undifferentiated typed groups scored at intermediate levels.

ISSUES IN SEX-ROLE IDENTITY AND SELF-REFERENT MEASUREMENT

These two classes of variables have all the problems of paper and pencil self-report scales. They have construct ambiguity, weak metric applications, few if any reliability studies and few reported studies in construct validity

(both convergent and discriminate). However, these are the best tools we now have available. In this section the issues and problems of sex-role measurement will be presented first, followed by self-referent measurement issues and problems.

Sex-Role Identity Measurement

Sex-role identity studies have traditionally viewed psychological masculinity-femininity as a bi-polar trait dimension (Block, 1973; Constantinople, 1973; Ruble, Frieze & Parsons, 1973). However, recent investigations have treated masculinity-femininity as independent dimensions rather than as opposite ends of a continuum (Bem, 1974; Berzins, Welling & Wetter, 1976; Heilbrun, 1976; Spence, Helmreich, & Stapp, 1975).

One problem encountered in sex-role research is lack of clarity in defining the construct. The problem stems from both theoretical and methodological contradictions in sex-role identity studies. Locksley & Colten (1979), put it best when they point out that there is a "persistant blurring between notions of predictive validity and of construct validity" and in addition, "contradictions between psychological and sociological levels of analysis" in sex-role identity studies (p. 1025). However, in the past few years there has been a lively dialog reported in the literature among Bem, Lenny, Locksley & Colten, Kelly, et al, Pedhazur & Tetenbaum and Spence & Helmreich concerning construct explication and metric considerations of the various sex-role inventories.

One of the first critical analysis of different sex-role scales was reported by Kelly & Worell (1977). They reviewed several measures that did not assume a unidimensional continuum model of masculinity-femininity, including the Bem Sex-Role Inventory, (Bem, 1974, 1977), the Personality Attributes Questionnaire, (Spence, Helmreich & Stapp 1974, 1975), the

Personality Research Form, (Berzins, Welling & Wetter, 1975), and the Adjective Check List, ACL (Gough & Heilbrun, 1965). They concluded that studies intended to validate the constructs were based on similar conceptualizations of sex-role characteristics, but that the scales differed psychometrically. Kelly, Furman & Young (1978), examined the measures cited above for interscale comparability and reported moderate correlations for the masculinity and femininity scales.

Bem (1977), reanalyzed her early work (Bem, 1974) based upon the studies of Spence, et al (1975). She concluded, as had Spence, et al, that the median split method of classifying subjects into a four way classification system was superior to her earlier difference model or t ratio method. In a later study Spence and Helmreich (1979), examined theoretical and empirical assumptions underlying three methods of assessing androgyny: Bem's difference model; the absolute score method; and a combination of both, the difference/median method. From that study, they concluded the median split method was conceptually useful, however this approach was not recommended for purposes of predicting individual scores. The balance method was also assessed to presuppose a unique model of masculinity-femininity, whereas the absolute method is purported to allow a number of alternatives, since masculinity and femininity contributions are not uniform. This study offers little in support of the construct validity of these scales, since the concern was with the predictive powers of classification.

Locksley & Colten (1979), question whether inventories devised to measure sex-role orientation should be used as individual personality measures, since the definition and measurement of masculinity and femininity constructs are based on stereotypically perceived aggregate sex differences. To that argument, Spence & Helmreich (1979), respond that the PAQ is a specialized measure of

socially desirable instrumental and expressive characteristics which objectively define trait-dimensions and to some extent distinguish the sexes, and thus may be labeled as "masculine" or "feminine". On the other hand, Bem's (1979) response to Locksley & Colten (1979), is that the BSRI is a measure for distinguishing sex-typed individuals from other individuals and she maintains that the concepts of sex-typing and androgyny are matters of degree and cognitive processes mediate the behavior and interpretations of the behavior of men and women.

Lenny (1979a), maintains that although the BSRI, PAQ, PRF ANDRO Scale, and the ACL do share certain aspects in defining androgyny (such as the combination of high degrees of masculinity and femininity), the scales are not interchangable. The scales emerged from differing theoretical perspectives, were developed differently, validated according to different criteria, and purport to measure similar though not identical constructs. Hence, the investigator's choice of subject classification is not merely a question of technique, but rather determines "which of several possible 'meanings' of each sex-type is under study" (p. 830).

Pedhazur & Tetenbaum (1979), pointed out that on some of the traits on the BSRI designated as sex related are considered neutral, and vice-versa, depending on the selected empirical approach. They then suggest that the lack of theoretical definitions preclude attempts to determine whether or not traits are representative of a given domain. They question how construct validity of a measure can be established when the concept is undefined. Bem (1979), maintains, however, that the theory underlying the BSRI is that sex-typed individuals will conform to their culture's definitions of masculinity and femininity, and that the definition varies from culture to culture. She holds that the theory is a theory of process, not content. In response to Pedhazur & Tetenbaum's (1979) argument that items judged neutral

on the BSRI by Bem and vice-versa by other researchers, Bem (1979) maintains that the strategy of item selection for the BSRI followed directly from the theory and utilized established techniques for test construction.

Finally, concerning the issue of construct definitions, Bem (1981) proposed a Gender Schema Theory, suggesting that the phenomena of sex-typing derives from the fact that the self-concept itself gets assimilated into the gender schema. Spence & Helmreich (1981), however, purport that Bem's proposal of the BSRI as a measure of individual differences in a unidimensional construct (that is, the gender schema as a means of processing information about the self and others) is a logical contradiction of being a measure of two independent dimensions, masculinity and femininity. Thus, conflicting theoretical perspectives again emerge in the literature, clouding the issue of construct definition.

A related problem encountered in sex-role research is the number of instruments devised to measure some aspect of sex-role. In addition to the scales previously mentioned (specifically the BSRI, PAQ, PRF ANDRO, and ACL), others have appeared in the literature. For example, Rosenkrantz, et al (1968) developed the Sex Role Stereotype Questionnaire, which attempts to measure perceptions of sex-role stereotypes, sex-role self-concept, and social desirability. Fand (see Gump, 1972), devised an inventory to assess attitudes toward the feminine role, which Bedeian & Zarra (1977) later used a revised form to study sex-role orientation in relation to her personality attributes. Another important issue is the lack of standardized definitions and terminology in sex-role research. For example, in studies using the BSRI for sex-role assessment the terms psychological androgyny (Wiggins & Holzmuller, 1978), sex-role androgyny (Brewer & Blum), sex-role (Small, Teagno, and Selz, 1980), sex-role orientation (Orlofsky, 1977), sex-role identity (Kachel, 1979), sex-role stereotypes (Deutsch & Gilbert, 1976), sex-typing (Doherty & Schmidt,

1978), sex-role typing (Anderson, 1978), and gender-role identity (Wells, 1980) all appear and are purported to be assessed by the same instrument, the BSRI. Likewise, the BSRI, the PAQ, the PRF ANDRO are all proclaimed to be measures of androgyny and/or sex-role identity.

Self-Referent Measurement

Self-referent research is concerned with how individuals perceive, describe and evaluate themselves. Here again one encounters the problem of construct explication and extensive use of labels when reviewing the literature. The labels of self-acceptance, self-concept, self-regard, and self-esteem are often used synonymously and as all inclusive labels to cover a wide range of self-descriptions. In recent reviews, Shavelson et al (1976) used the all-inclusive term self-concept; Shepard (1979), used self-acceptance in her review and Wells and Marwell (1976), employed the term self-esteem. Wylie (1974) seems to use the terms self-concept and self-regard synonymously but uses the term self-referent as an overall category label. The problem of validity is addressed by Wells and Marwell (1976, p. 6) when they state, "There are a significant number of validation studies for self-esteem measures present in the literature which have uniformly neglected the first stage in demonstrating construct validity -- that of adequately defining and explicating the construct of interest." In addition, Shavelson, et al (1976, p.9), point out that the "...difficulty in interpreting measures of self-concept arises because the data are not readily available on the equivalence of various self-concept measurement instruments."

METHOD

Subjects

The population included in this research represents a stratified random

sample (with replacement) of junior year students enrolled in two St. Louis area Universities, one private and one public. The 10 percent sample of all juniors produced a sample size of 248. Letters soliciting cooperation and a packet containing the measurement instruments and a personal data sheet were mailed to each person in the sample. The number of subjects completing the test packet which contained complete and usable information were 161 (78 male and 83 female).

Instruments

The instruments used in this research were the Bem Sex-Role Inventory (BSRI), the four self-referent measures: The Personal Orientation Inventory, Self-Acceptance (POI-SA); the Personal Orientation Inventory, Self-Regard (POI-SR); Self-Esteem Questionnaire (SEQ-20); and the Wallace Self-Concept Scale (WSCS).

The BSRI was chosen as a measure of sex-role identity due to its wide use in the reported research studies. The scale contains 60 personality attribute statements, with 20 masculine typed, 20 feminine typed and 20 neutral type characteristics (Bem, 1974). Subjects are asked to rate themselves, on a 7-point Likert scale, the degree to which each item is self-descriptive, ranging from "never or almost never true" to "always or almost always true" (Bem, 1974). The subjects' scores on the masculinity, femininity, and neutral scales are obtained by summing the scores of the individual items defining each scale (Bem, 1974).

Sex-role orientation is determined by the position of ones masculinity score and femininity score relative to the median masculinity and median femininity scores for the sample (Bem, 1977). A person whose masculinity score is above the median masculinity score and whose femininity score is above the median femininity score is classified as androgynous. A person

whose masculinity and femininity scores are below the respective median masculinity and femininity scores is classified as undifferentiated. A person whose masculine score is above the median masculine score and whose feminine score is below the median feminine score is classified as masculine. A person whose masculine score is below the median masculine score and whose feminine score is above the median feminine score is classified as feminine.

The POI is an inventory which purports to measure values and behavior that are important in developing self-actualization (Shostrom, 1974). Two subscales from the POI, self-acceptance and self-regard, were used in this research. The POI-SA attempts to measure the acceptance of self in spite of one's personal weakness. The POI-SR claims to measure the ability to like self due to one's strengths as a person.

The Self-Esteem Questionnaire is a 20-item measure with a true-false response scale. The SEQ-20 purports to measure the level of self-esteem or positive self-evaluation and overall self-regard (Wetter, 1975).

The Wallace Self-Concept Scale is a 15 item bi-polar adjective scale based upon the semantic differential scaling technique (Osgood, 1957). The WSCS purports to measure the perception one holds toward the concept "Myself as a Person" giving an overall or general view of the self (Wallace, 1980).

Procedures

The statistical procedure chosen to analyze the data was a multiple step-wise discriminant analysis (Nie, et al, 1975; Klecka, 1980). Discriminant analysis is used to distinguish between two or more groups based upon a collection of discriminating variables that measure characteristics on which groups are expected to differ. To determine the significance of each discriminant variable an F ratio for each pair of groups was calculated. This ratio is a significance test for the Mahalonobis distance between groups. Nie, et al, (1975, p. 460) states that "Under the assumptions of random sampling and

multivariate normal distributions, these F's can be used to test for the equality of pairs of centroids." The stepwise discriminant analysis is an additional procedure similar to stepwise regression which sequentially selects from the original collection of variables those that contain most of the classificatory information. The stepwise procedure also reduces but does not eliminate the risk of interdependencies among variables. This type analysis attempts to form one or more linear combinations of the variables to form discriminating functions. When these functions are standardized (given standard discriminate weights) they yield coefficients which serve as indicators of the relative contributions, or importance, of the associated variables.

RESULTS

The research objective of this study was to determine which type of self-referent measure best discriminates among sex-role identities. To answer this question a multiple stepwise discriminant function procedure was used as a method of analyzing the data. The analyses were made for male/female combined, male only, and female only subjects. The results are organized around the standardized discriminate function coefficient data as presented in Table 1. These standardized discriminant coefficients represent the contribution made by the self variables to the respective function. Nie, et al, (1975, p. 443) states, "The standardized discriminant function coefficients are of great analytic importance in and of themselves."

Discriminant Function One

The first function is a powerful factor which accounts for most of the variance associated with the self measures and sex-role identity groups. The data from Table 1 indicates that function one accounts for some 97 percent of the variance associated with males, while male/female combined account for 82 percent of the variance and females account for some 72 percent of the variance.

Table 1 about here

Wilks' lambda indicates that considerable discriminating power exists with the self measures used (the lower the lambda the more the discriminating power). The data from Table 1 shows that the self measures have the most discriminating power for females (lambda of .56). For males the lambda is .61 and for males/females combined is .67.

The standardized function coefficients provide the basis for judging the discriminating power of the four self measures. As Nie, et al (1975, p. 443) states, "When the sign is ignored, each coefficient represents the relative contribution of its associated variable to that function. The sign merely denotes whether the variables is making a positive or negative contribution." These coefficients clearly show the strength and ability of the self-concept measure to discriminate among sex-role groups. This is shown in Table 1 where the WSCS scale produces the highest positive discriminant function coefficients of 1.214 for females, for males .514 and for male/female combined was .686. It should be pointed out that for males, the self-esteem (SEQ) coefficient of .494 was competing with the WSCS.

The standardized coefficients indicate that self-acceptance is the least likely self measure to discriminate among sex-role identities for males (-.169) and for male/female combined (-.263). For females self-regard is the least likely to discriminate among sex-role types with a negative coefficient of -.271.

Discriminant Function Two

The second discriminant function accounts for most of the remaining variance associated with the self measures and sex-role identity groups.

Information contained in Table 1 shows that function two accounts for some 26 percent of the variance associated with female subjects, while male/female combined account for 17 percent of the variance and males account for only two percent of the variance.

Wilks' lambda (Table 1) indicates, as did the lambda in function one, that self measures have the most discriminating power for female subjects (lambda .84). For male/female combined the lambda is .92 and males there is almost no discriminating power remaining with a lambda of .98.

The standardized discriminant function coefficients indicate that for females self-regard measure is the best discriminator among sex-role identity (coefficient 1.138) and the self-concept measure is the least discriminating (-.473). For males, the self-acceptance measure is the most discriminating (coefficient 1.104) while the self-esteem measure is the least (-.272) For male/female combined, the self-concept measure is the most discriminating (coefficient .967) and the self-regard measure the least (coefficient -.824).

Discriminate function three contributes very little new information. The percent of variance contributed is very low, the eigenvalues are low, the canonical correlations very low, and Wilks' lambda is very high. Since none of these statistics are significant the third function will be disregarded in the analysis but is presented in Table 1 for reporting purposes.

Classification Results from the BSRI

A secondary objective of this study was to determine how a group of junior year college students would rate themselves on the BSRI four way classification system. The information needed to answer this question is included in the group centroid, eigenvalue and canonical correlation, and actual versus predicted group classification data.

Table 2 About Here

The group centroids of discriminate scores for androgynous, masculine feminine and undifferentiated sex-role types are present in Table 2. These centroids summarize the group locations in space as defined by the discriminant functions (Nie, et al 1975; Klecka, 1980). The first function (Table 2) distinguished the most androgynous group from the other three where the androgynous group centroids are .934 for females, .686 for males, and .781 for male/female combined. A distinct and clear separation occurs between androgynous group centroids and undifferentiated group centroids for male/female (undifferentiated centroid -.890) and for males (undifferentiated centroid of -.998). However, the separation for females is much greater between androgynous group centroid and feminine group centroid (feminine centroid of -.924). The ability of the first function to separate the groups is indicated

Table 4 About Here

by the eigenvalue and their associated canonical correlations. The data from Table 1 indicates that the greatest separation for sex-role groups occurs for males with an eigenvalue of .546 and an associated canonical correlation of .60. The next greatest separation is for females with an eigenvalue of .478 and a canonical correlation of .58. Even though separation does occur the data in Table 4 indicates that there is considerable overlap among the groups. The percent of observations correctly classified is highest for the androgynous group. These are 59 percent for male/female combined and 81 percent for females. However for males the undifferentiated group is highest with 64 percent.

For function two (Table 1), the low eigenvalues and their associated low canonical correlations suggest that this function is not able to separate the groups as efficiently as does function one. In function two the greatest separation of sex-role groups occurs for females with an eigenvalue of .175 and an associated canonical correlation of .39. The next greatest separation is for male/female combined with an eigenvalue of .081 and a canonical correlation of .27. There is almost no contribution made for male subjects with an eigenvalue of .013 and a canonical correlation of .12. The group centroids from Table 4 show that the greatest separation for function two is with the female subjects (feminine centroid of .655). However, for male/female combined (masculine centroid of .390) and for males (masculine centroid of .264) the masculine group centroid best separates the groups. Again, function three does not contribute to the analysis and is presented in Tables 1 and 2 for information only.

DISCUSSION AND SUMMARY

The primary research objective of this study was to determine which type of self-referent measure best discriminates among sex-role identities for junior year college students. A secondary research objective was to determine how this group would classify themselves on a sex-role identity measure. The population included in this study represents a stratified random sample (with replacement) of junior year students enrolled in two St. Louis area Universities, one private and one public. The total sample of 161 included 78 males and 83 females. The Bem Sex-Role Inventory (BSRI) with the recommended four way classification of androgyny, masculinity, femininity, and undifferentiated was chosen for this study because it was the most often used scale to measure sex-role identity. On the other hand there was no one self measure which was consistently used across studies. In view of this the self measures chosen were the Personal Orientation Inventory sub-scales of self acceptance (POI-SA) and self regard (POI-SR), the Self Esteem Questionnaire (SEQ), and the Wallace Self-Concept Scale (WSCS). The statistical procedures chosen to analyze the data was a multiple stepwise discriminant analysis. The dependent or group classification variable was sex-role identity and the discriminant variables were the four self measures.

These two classes of variables (sex-role and self measures) have all the problems of paper and pencil self-report scales. They have construct ambiguity, weak metric applications, few if any reliability studies and few reported studies in construct validity. In the past few years there has been a lively dialog reported in the literature among Bem, Lenny, Locksley & Colten, Kelly, et al, Pedhazur & Tetenbaum and Spence & Helmreich concerning construct explication and metric considerations of the various sex-role inventories. These same issues are discussed for self measures in the work of Shavelson et al, Wells & Marwell, and Wylie. However, given all the controversy, a review of the

literature indicates that an important relationship exists between self-referent and sex-role identity measures.

In this study, four scales were chosen to represent four different types of self-report constructs, i.e., self-concept, self-regard, self-acceptance and self-esteem. One of the concerns going into the study was the potentially high correlation among the self measure scales. The correlations range from a low of .09 between the WSCS and the POI-SA to a .53 between the POI-SR and the SEQ. Although the correlations range from low to moderate, the scales are assumed to be tapping different self domains. Also, the stepwise discriminate analysis statistical technique further reduces the impact of the inter correlations.

There are three major generalizations or conclusions which may be drawn from the analysis of data. First, regardless of the type of measure, androgynous typed individuals score higher on self measures than do undifferentiated individuals. In this study between groups F statistics reported in Table 5 and their associated descriptive statistics in Table 3 indicate that the androgynous group scored significantly higher than did the undifferentiated group across the four types of self-referent measures. These results support the position that high scores on self measures for androgynous individuals are an integration of masculinity and femininity (Bem, 1975, 1977; Spence et al, 1975; Flaherty & Dusek, 1980).

Second, the results indicate that when the self measures were considered together the self-concept measure was the most effective discriminator among sex-role identities. The difference was distinctive in that the first discriminate factor accounted for most of the variance across male/female combined, male and female subjects. The self-concept scale was a particularly strong discriminator with females. The self-acceptance measure was the least discriminating for male/female combined and male subjects. The self-esteem

measure was the least discriminating for females. Self-regard was not influential until the second discriminate factor and then only with females. This difference was particularly noticeable on the group centroids. Here the self-concept measure clearly separated the androgynous and undifferentiated groups on male/female combined and male subjects. For females the greatest separation was between the androgynous and feminine typed individuals on the self-concept measure.

Given the construct definitions of the self measure (p. 11) and sex-role identity (p. 10), these conclusions seem appropriate. Individuals who rate themselves high as a person (high self-concept score) also score high on measures of both masculinity and femininity (the androgynous orientation) across male/female combined, male and female subjects. On the other hand, individuals who rate themselves low as a person (low self-concept score) are also low on both masculinity and femininity measures (undifferentiated type) for male/female combined and male subjects. For females, individuals who rate themselves low as a person (low self-concept) tend to rate themselves high on the femininity scale.

Third, the BSRI did place the subjects in roughly equal numbers across the four categories. The greatest number of subjects was placed in the androgynous category (44) and the least in the undifferentiated category. However, when broken down by sex the masculine males (9) and undifferentiated females (10) are under represented. However, the group classification matricies (Table 4) show a more confused picture. When the scores on the BSRI are considered along with the linear combinations of the discriminant variables (self measures) a considerable shift occurs between actual and predicted sex-role status. This discrepancy between actual and predicted is especially significant for masculine males and undifferentiated females so one suspects that the small sample size noted earlier is a factor here. Regardless, there is still considerable over-

lap across all categories between predicted and actual classification. The literature is not clear on this point, however the authors suspect that most sex-role studies would have this type of overlap if the independent variables used in the studies were put to the classification test.

Although this research design was different from that of Flaherty and Dusek (1980) the conclusions are similar. First, the relationship of masculinity and femininity to self measures depends upon the type of measure used. In this research the self-concept measure separated sex-role identity more effectively than did self-regard, self-acceptance and self-esteem measures. Second, the androgynous group had significantly higher scores across all self measures than did the undifferentiated group, reflecting the notion that an integration of masculinity and femininity is associated with high ratings on self measures. Third, research with the BSRI and self measures is a multivariate research problem. Since Bem's (1974, 1977) model calls for a classification procedure, discriminate analysis seems to be the prefered statistical analysis.

Finally, there are several limitations to the generalizability of this study. Although this was a naturalistic study with a stratified random sample, the design is still ex post facto. Masculine males scored lower than feminine males on three of the four self measures, which is contrary to many studies. The sample size of masculine males and undifferentiated females was out of proportion to the other sample size categories. The inter correlations among the self measures are moderate but of some concern and may reflect the high overlap between the actual and predicted group classification results.

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TABLE 1

Standardized Discriminant Function Coefficients Across Variables
For Male/Female Combined, Male, and Female Subjects

Variable	Function 1			Function 2			Function 3		
	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female
WSCS	.686	.514	1.214	.967	.241	-.473	-.102	-.849	.126
POI - SR	.371	.391	-.157	-.824	-.272	1.138	-.435	-.115	-.186
POI - SA	-.263	-.337	-.043	.437	1.104	-.438	.950	.119	1.006
SEQ	.193	.494	-.320	-.526	-.165	.243	.551	.973	.178
Eigenvalue	.379	.546	.478	.081	.013	.175	.004	.002	.008
Percent Variance	82.33	97.31	72.74	17.66	2.29	26.06	.01	.40	1.19
Canonical Correlation	.52	.60	.58	.27	.12	.39	.006	.05	.09
Wilks' Lambda	.67	.61	.56	.92	.98	.84	.99	.99	.99

TABLE 2

Group Centroids of Discriminant Scores for Sex-Role Groups

Group[1]	Function 1			Function 2			Function 3		
	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female
1	.781	.686	.934	.089	.076	.237	-.006	.069	.018
2	-.280	-.385	-.134	.390	.264	-.424	.005	-.069	-.063
3	.20	.618	-.924	-.364	-.090	.655	.006	-.041	-.044
4	-.890	-.998	-.612	-.142	-.058	-.243	-.007	.017	.220

[1]Sex-Role Orientation: group 1 = androgynous, group 2 = masculine, group 3 = feminine, group 4 = undifferentiated

TABLE 3

Descriptive Statistics On Groups and Variables
For Male/Female Combined, Male, and Female Subjects

Sex-Role	N	WSCS Mean	WSCS SD	POI-SR Mean	POI-SR SD	SEQ Mean	SEQ SD	POI-SA Mean	POI-SA SD
Androgynous									
Male/Female Combined	44	86.30	7.86	13.27	2.05	16.86	2.94	14.91	3.67
Male	18	82.72	7.35	13.11	2.14	16.89	2.78	15.22	3.70
Female	26	88.77	7.34	13.38	2.02	16.85	3.09	14.69	3.72
Masculine									
Male/Female Combined	41	78.80	8.71	11.22	2.69	13.71	4.52	14.95	3.79
Male	9	75.77	13.24	11.77	2.38	14.00	4.27	15.44	2.35
Female	32	79.66	7.02	11.06	2.78	13.63	4.65	14.81	4.13
Feminine									
Male/Female Combined	41	80.10	8.99	12.90	1.95	16.05	3.28	14.87	3.06
Male	26	82.31	8.47	12.88	1.82	16.42	2.50	14.62	2.72
Female	15	76.27	8.84	12.93	2.22	15.40	4.34	15.33	3.62
Undifferentiated									
Male/Female Combined	35	72.09	9.50	10.89	3.04	12.89	4.52	14.82	3.54
Male	25	70.12	9.32	10.68	2.90	12.48	3.88	14.32	3.66
Female	10	77.00	8.50	11.40	3.47	13.90	5.95	16.10	3.03

TABLE 4

Between Groups F Statistic Analysis at Each Stepwise
Variable Entry For Male/Female Combined, Male, and Female Subjects

Between Groups	Step 1 (WSCS)			Step 2 (POI-SR)			Step 3 (POI-SA)			Step 4 (SEQ)		
	Male/Female Combined [2]	Male[2]	Female[2]	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female	Male/Female Combined	Male	Female
1 vs 2	15.58	(3.47)[3]	20.37	10.63	(2.83)	10.74	7.96	(2.08)	7.32	6.35	(1.73)	5.47
1 vs 3	10.57	(.22)	25.42	5.61	(.10)	15.87	3.72	(.15)	10.49	2.83	(.11)	8.30
1 vs 4	51.51	19.85	17.10	26.52	13.44	8.45	18.11	8.90	6.04	13.62	7.18	4.62
2 vs 3	(.45)	(3.41)	(2.00)	5.12	(2.44)	7.68	4.40	(2.14)	5.49	4.03	(1.18)	4.39
2 vs 4	11.16	(2.53)	(.91)	5.98	(1.41)	(.99)	3.99	(1.02)	(.76)	3.04	(.78)	(.62)
3 vs 4	15.86	22.61	(.55)	10.03	14.28	(1.79)	7.27	9.73	(1.83)	5.74	8.00	(1.41

[1]Sex-Role Orientation: group 1 = androgynous, group 2 = masculine, group 3 = feminine, group 4 = undifferentiated

[2]Degrees of Freedom: Male/Female Combined, 4 & 154; Males only, 4 & 71; Females only, 4 & 76.

[3]Parentheses indicates that the F statistic is not significant (.05 level)

TABLE 5

Group Classification Matricies For
Male/Female Combined, Male, and Female Subjects

Male/Female Combined

Actual Sex-Role Status	Predicted Sex-Role Status				Percent of observations in each group correctly classified
	Andro	Masculine	Feminine	Undif	
Androgynous	26	5	11	2	59
Masculine	11	14	8	8	34
Feminine	13	5	16	7	39
Undifferentiated	2	10	8	15	43

Male Subjects

	Andro	Masculine	Feminine	Undif	
Androgynous	8	2	7	1	44
Masculine	2	1	2	4	11
Feminine	9	5	10	2	39
Undifferentiated	3	4	2	16	64

Female Subjects

	Andro	Masculine	Feminine	Undif	
Androgynous	21	1	3	1	81
Masculine	7	13	4	8	41
Feminine	2	1	10	13	67
Undifferentiated	0	4	4	2	20